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EXAMINER	
MANCHO, RONNIE M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/633,488	**Applicant(s)** COX ET AL.	
	Examiner RONNIE MANCHO	**Art Unit** 3664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-31 and 34-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-31, 34-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: In claim 7 line 2 applicant is advised to change, “a maximum residual error………utilized to determine” to --a maximum residual error …..***is*** utilized to determine-- for clarity.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7, 8, 11, 19, 26, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, the applicant recites, “a maximum”. It is not clear what all is meant and encompassed by “maximum”. The term is a relative term and does not particularly and distinctly set forth the scope of the claim by not setting forth the meets and bounds of “a maximum”. Is the maximum 3m or 4m or 100m? The bounds are not set forth. The rejection applies to claims 11, 19, 26 having similar limitations.

Claim 8 is rejected for depending on rejected claim 7.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-9, 34-44 rejected under 35 U.S.C. 103(a) as being unpatentable over P. Ptasinski et al (Jounal of Navigation, 2002, chapter 55, pages 451-462) in view of Hancock (6202023).

Regarding claim 2, Ptasinski et al disclose the satellite positioning receiver (see GPS antenna, fig. 4) capable of receipt of at least three positioning signals (pages 453, 454) comprising:

a navigation processor (figs. 3&4) that processes the at least three positioning signals and determines an at least three code phases (pages 453-456); and

a location determined from initial digital terrain elevation data (pages 453-456) used to calculate a solution with the at least three code phases and an altitude equation derived from the initial digital terrain elevation data, where the solution further includes:

a horizontal error ellipse parameter (fig. 1, pages 452, 453) in the altitude equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error (figs. 1&2);

a plurality of points along the major axis and the minor axis that form points on a digital map having longitudes and latitudes (figs. 1&2; pages 452, 453); and

a memory that contains digital terrain elevation data (altitude augmentation using digital maps, pages 454-456) the grid points.

Ptasinski disclose the points along the major axis and the minor axis (fig. 1) as a polynomial fit over a surface (figs. 1, 2, 5-10; pages 452, 453, 458- 462) of points on a digital map. Ptasisnksi is not quite clear about a grid of grid of points, although a digital map with points along longitudes and latitudes are disclosed on pages 452, 453. However, to clearly illustrate the limitation, Hancock teaches of a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski as taught by Hancock (col. 4, lines 1+) for the purpose of allowing faster database searches of position.

Regarding claim 3, Ptasinski et al disclose the satellite positioning receiver of claim 2, further including:

a server that receives a plurality of satellite code phases where each of the satellite code phases is associated with a satellite positioning system signal over a wireless network (ericson moble, fig. 4); and

a controller in the server accesses the initial digital terrain data in order to determine a solution (pages 455, 456)

Regarding claim 4, Ptasinski et al disclose the satellite positioning receiver of claim 2, where the initial digital terrain elevation data is retrieved from the memory in response to receipt of a signal other than the at least three positioning signals.

Regarding claim 5, Ptasinski et al disclose the satellite positioning receiver of claim 2, wherein the digital terrain elevation data in the memory is NIMA (DTED) level 0 digital mean elevation data.

Regarding claim 6, Ptasinski et al disclose the satellite positioning receiver of claim 2, where the digital terrain elevation data in the memory is GTOPO30 Global Elevation data.

Regarding claim 7 (as best understood), Ptasinski et al in view of Hancock disclose the satellite positioning receiver of claim 2, further including:

a maximum residual error in the polynomial surface fit over the grid points utilized to determine whether the error is below a predetermined threshold. Ptasinski disclose residual error when a polynomial (ellipsoid) if fit over on the surface of the earth within (± 100m).

Ptasinski did not disclose "grid points" as claimed. However, Ptasinski disclose a maximum residual error below a predetermined threshold when a polynomial such as an ellipsoid is placed to fit over points on the surface of the earth. That is Ptasinski (pages 452 and 453, figs. 1 and 2) disclose a maximum deviation of a point on the surface of the earth from the ellipsoid (polynomial) to be least accurate. In other determinations, the error was 0.4 m in one situation and 0.00002m in another situation. These errors were determined to be reasonably accurate. Hancock teaches of a polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski as taught by Hancock for the purpose of allowing faster database searches of positions (col. 4, lines 1+) within a grid.

Regarding claim 8, Ptasinski et al disclose the satellite positioning receiver of claim 7, wherein, the predetermined threshold is 100 meters (page 452).

Regarding claim 9, Ptasinski et al disclose the receiver of claim 2, wherein the navigation processor is a processor located in a server.

Regarding claim 34, Ptasinski et al disclose a server (fig. 4), comprising:

a transceiver (figs. 3&4) that receives a plurality of satellite code phases (pages 454-457);

a memory (figs. 3&4) with digital terrain elevation data (pages 454-457); and

a controller (figs. 3&4) that processes the plurality of code phases and accesses the digital terrain data in memory with an initial height to determine a location indicated by the plurality of satellite codes and the digital terrain data (pages 454-457);

a message containing the location data sent from the transceiver;

a horizontal error ellipse parameter (figs. 1&2) in an altitude equation that form an error ellipse having a major axis and a minor axis that corresponds to an altitude error about the initial height (pages 452-456); and

a plurality of points along the major axis and the minor axis that form a grid of grid points that the controller accesses the digital terrain elevation data in memory at the grid points (pages 452-457).

Ptasinski disclose the points along the major axis and the minor axis, but was no quite clear about a polynomial surface fit over the points. However, Hancock teaches of a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski for the purpose of allowing faster database searches of position (col. 4, lines 1+).

Regarding claim 35, 37, 39, 41, 43, Ptasinski / Hancock et al disclose the satellite position receiver, wherein the solution further includes an initial height taken from a height value in the neighborhood of a pseudolite (see figs. 1 and 2; pages 452-453). In situations where at least three satellites are not available, a 3-D position cannot be calculated. Thus for calculation of a 3-D position, two position signals from two satellites are obtained and a third signal for height is obtained from another sensor such as a pseudollite (also known as a pseudo satellite; see Ptasinski pages 452-453). This is known as adding an altitude-aiding equation to obtain a 3-D position solution. Fig. 4 shows a base station (pseudollite) providing position correction data to a GPS receiver. The base station is located at a geodetic site. That is the 3-D position (including height) of the base station are known and used as a standard in the cell or area covered by the base station. The correction information includes altitude information for position augmentation in the GPS receivers in the area covered by the base station.

Regarding claim 36, 38, 40, 42, 44, Ptasinski / Hancock et al disclose the satellite position receiver, wherein the pseudollite is able to communicate with a wireless device (pages 452-457; fig. 4). Fig. 4 shows a base station (pseudollite) providing position correction data to a GPS receiver. The base station is located at a geodetic site. That is the 3-D position (including height) of the base station are known and used as a standard in the cell or area covered by the base station. The correction information includes altitude information for position augmentation in the GPS receivers in the area covered by the base station.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 10-31 are rejected under 35 U.S.C. 102(b) as being anticipated by P. Ptasinski et al (Jounal of Navigation, 2002, chapter 55, pages 451-462).

Regarding claim 10-31, 34 are, Ptasinski et al disclose a method of determining the location of a receiver (figs. 3&4) in recipient of at least three positioning signals, comprising:

identifying a reference location (pages 452-456) with the at least three positioning signals;

retrieving an initial height (pages 452, 453);

determining an average height along with an average height error (altitude error, pages 452, etc) from the initial height (pages 452-454);

deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

solving the at least three simultaneous equations (pages 452-456) with the average height and the average height error that results in a position and a corresponding horizontal error ellipse (figs. 1, 2);

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (figs. 1&2); and

solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 453-456).

Regarding claim 11, Ptasinski et al disclose the method of claim 10, where determining an average height further includes:

identifying one of a minimum height and a maximum height; and setting the height error equal to the absolute value of the difference between the one of the minimum height and the maximum height (equation 1, page 453; equation 6, page 454) and the average height.

Regarding claim 12, Ptasinski et al disclose the method of claim 10, where retrieving an initial height further includes:

transmitting a plurality of code phases to a server where each of the code phases is associated with each of the positioning signals; and

accessing digital terrain data stored in a memory to retrieve the initial height.

Regarding claim 13, Ptasinski et al disclose the method of claim 12, wherein the wireless network is a cellular communication network.

Regarding claim 14, Ptasinski et al disclose the method of claim 10, where retrieving an initial height further includes: receiving the initial height from a memory located within the satellite positioning receiver.

Regarding claim 15, Ptasinski et al disclose the method of claim 10, further include: acquiring another height using variables from the two dimensional polynomial; and comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 16, Ptasinski et al disclose the method of claim 15, where the predetermined threshold is 100 meters.

Regarding claim 17, Ptasinski et al disclose the method of claim 10, where the receiver is located in a server.

Regarding claim 18, Ptasinski et al disclose the satellite positioning receiver apparatus (figs. 3&4) in recipient of at least three positioning signals, comprising:

means for identifying a reference location with the at least three positioning signals (pages 452-456);

means for retrieving an initial height (pages 452-456);

means for determining an average height along with an average height error from the initial height; means for deriving at least three simultaneous equations associated with the at least three positioning signals(pages 452-456);

means for solving the at least three simultaneous equations with the average height and the average height error that results in a position and a corresponding horizontal error ellipse(pages 452-456);

means for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse; and

means for solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver(pages 452-456).

Regarding claim 19, Ptasinski et al disclose the apparatus of claim 18, wherein the determining an average height means further includes: means for identifying one of a minimum height and a maximum height; and means for setting the height error equal to the absolute value of the difference between the one of the minimum height and the maximum height and the average height.

Regarding claim 20, Ptasinski et al disclose the apparatus of claim 18, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a server located in a wireless network.

Regarding claim 21, Ptasinski et al disclose the apparatus of claim 20, wherein the wireless network is a cellular communication network.

Regarding claim 22, Ptasinski et al disclose the apparatus of claim 18, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a memory located within the satellite positioning receiver.

Regarding claim 23, Ptasinski et al disclose the apparatus of claim 18, further including:

means for acquiring another height using variables from the two dimensional polynomial; and means for comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 24, Ptasinski et al disclose the apparatus of claim 23, where the predetermined threshold is 100 meters.

Regarding claim 25, Ptasinski et al disclose a machine-readable signal bearing medium (figs. 3&4) for satellite positioning receiver apparatus containing a plurality of machine-readable signals, comprising:

means (figs. 3&4) for identifying a reference location upon receipt of at least three positioning signals (pages 452-456);

means (figs. 3&4) for retrieving an initial height (altitude, pages 452-456);

means (fig. 2) for determining an average height along with an average height error from the initial height (pages 452-456);

means (figs. 3&4) for deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

means (figs. 3&4) for solving the at least three simultaneous equations with the average height and the average height error that results in a position and a corresponding horizontal error ellipse (pages 452-456);

means (figs. 3&4) for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (pages 452-456); and

means (figs. 3&4) for solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 452-456).

Regarding claim 26, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the determining an average height means further includes:

means for identifying one of a minimum height and a maximum height (pages 452-456); and

means for setting the height error equal to the absolute value of the difference between the one of the minimum height and the maximum height and the average height (pages 452-456).

Regarding claim 27, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the means for retrieving an initial height further includes: means for receiving the initial height from a server located in a wireless network.

Regarding claim 28, Ptasinski et al disclose the machine-readable signal bearing medium of claim 27, wherein the wireless network is a cellular communication network.

Regarding claim 29, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, wherein the means for retrieving an initial height further includes:

means for receiving the initial height from a memory.

Regarding claim 30, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, further including:

means for acquiring another height using variables from the two dimensional polynomial; and

means for comparing the difference between the other height and altitude to a predetermined threshold.

Regarding claim 31, Ptasinski et al disclose the machine-readable signal bearing medium of claim 30, where the predetermined threshold is 100 meters.

Response to Arguments

8. Applicant's arguments filed 6/9/08 have been fully considered but they are all not persuasive.

The rejections drawn to MPEP 2114/2115 have been vacated.

Applicant argues that the term, “maximum” is disclosed in the specification pages, 9, 19, etc. The examiner respectfully disagrees and notes that applicant does not show how one of ordinary skill can readily determine “Maximum residual error”. It is noted that the specification does not provide a standard or suggestion on how to determine “maximum residual error” as claimed. Moreover, applicant copies the limitation from the specification and pastes it in the claims. The term, “maximum” is a relative term and does not particularly and distinctly set forth

the scope of the claim by not setting forth the meets and bounds of "a maximum" as claimed. Is "maximum" 3m or 4m or 100m? The bounds are not set forth.

The applicant further argues that the prior art, Ptasinski does not disclose an "error elipse", but admits that the prior art discloses an ellipsoid. To the extent that the applicant is arguing that the terms used in the claims must match the terms in the prior art, the examiner disagrees and notes that MPEP recognizes that the subject matter of the claims need not be described literally (i.e. using the same terms or in *haec verba*) in prior art in order for prior art to anticipate the claims.

The applicant argues that the prior art, Ptasinski does not disclose "a grid of grid of points" in figs. 1 and 2, pages 452 and 453. The examiner notes that although figs. 1 and 2 do not clearly show a grid of grid of points, Ptasinski (figs. 5-10) mentions a digital map well known to show a grid of grid of points. However, in the 103 rejection above the second prior, Hancock discloses a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; col. 4, lines 1-10; cols. 6, etc). The drawings speak for themselves.

Applicant further argues that the prior art does not disclose "points along the major axis and minor axis that correspond to the altitude error". The examiner disagrees and notes that this particular limitation is not claimed. The limitation in the claims read "a horizontal error ellipse parameter in the altitude equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error".

Applicant then argues that since Ptasinski fails to disclose "a grid of grid of points" Ptasinski does not disclose the limitation, "a horizontal error ellipse parameter in the altitude

equation that form an error ellipse having a major axis and a minor axis that correspond to the altitude error;

a plurality of points along the major axis and the minor axis that form a grid of grid points". The applicant further argues that Ptasinski discloses *a difference between spheres* with one having a center at the center of the earth. The examiner disagrees and notes that there are no *spheres* in the prior art as insisted by the applicant, *plural tense emphasized*. The prior art Ptasinski shows an ellipse to represent the shape of the earth (see fig. 1, page 452). When calculating a 3-D GPS position solution, the earth is assumed to be a *sphere, singularity emphasized.* Now to compute a GPS position on the surface of the earth, Ptasinski notices that an error will occur due to the earth not being a sphere and thus compares the difference between the points on the ellipsoid and the sphere to obtain an approximate error between the positions on the ellipse and positions on the sphere. Thus the points on the ellipse form an error ellipse since they are approximations compared to a spherical earth. Ptasinski uses the approximations in an altitude-aiding equation to compute an accurate 3-D GPS position (see pages 452-454). The error ellipse shown in fig. 1 has a major axis and a minor axis. As already indicated the error when the sphere is compared with the ellipse results in an altitude error. Therefore, fig. 1 shows a plurality of points along the major axis and the minor axis. Ptasisnksi shows latitudes and longitudes, thus it can be assumed that the points on the longitudes and latitudes form "a grid of grid points". However, "a grid of grid points" is clearly shown in Hancock (fig. 1, cols. 4 and 6). Thus the prior art anticipate the claims.

Applicant failed to address Hancock as disclosing "a grid of grid points".

Applicant further argues that the prior art does not disclose fitting a two-dimensional polynomial to a horizontal error ellipse. The examiner disagrees and notes that Ptasinski disclose a polynomial (the sphere of pages 452, 453) fitted over an error ellipse (figs. 1& 2) to obtain an error in position calculation in an altitude aiding equation (see pages 452-454). The error ellipse has horizontal and vertical dimensions, thus Ptasinski disclose a horizontal error ellipse.

Thus the prior art anticipate the claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONNIE MANCHO whose telephone number is (571)272-6984. The examiner can normally be reached on Mon-Thurs: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Khoi can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ronnie Mancho
Examiner
Art Unit 3664

9/30/2008
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664